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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/803,762

03/18/2004

Terry C. Helstrom

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09/08/2006

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EXAMINER

LEE, JOHN J

ART UNIT

PAPER NUMBER

2618

DATE MAILED: 09/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/803,762	<b>Applicant(s)</b> HELSTROM ET AL.	
	<b>Examiner</b> JOHN J. LEE	<b>Art Unit</b> 2684	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 18 March 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6,8-13 and 15-20 is/are rejected.
- 7) ☒ Claim(s) 7 and 14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claims 1-6, 9-13, and 16-20** are rejected under 35 U.S.C. 102(b) as being anticipated by Noreen et al. (US 5,303,393).

Regarding **claim 1**, Noreen discloses that a digital audio system (Fig. 2 and column 2, lines 26 - 68). Noreen teaches that a receiver coupled to a radio frequency modulator (Fig. 2 and column 5, lines 53 – column 6, lines 58, where teaches conventional AM/FM receiver connected to an AM/FM antenna with the addition of the radio satellite microchip and satellite RF electronic including a modulator). Noreen teaches that a source signal modulated by the radio frequency modulator to provide a modulated signal (Fig. 2, 3, column 6, lines 17 – column 7, lines 30, and column 9, lines 21 – 62, where teaches the modulator uses voice coder for source encoding and modulated a modulated signal). Noreen teaches that an external antenna (201 in Fig. 2) for receiving the source signal and for transmitting the modulated signal (Fig. 2, 3 and column 5, lines 53 – column 6, lines 53, where teaches an external L-band antenna for receiving the source signal and transmitting the modulated signal).

Regarding **claim 2**, Noreen teaches that the receiver is a satellite radio receiver and the radio frequency modulator is an FM radio frequency modulator (Fig. 2, 3A and

column 6, lines 3 – column 7, lines 30, where teaches the mobile station has a satellite receiver and AM/FM radio frequency modulator).

Regarding **claim 3**, Noreen teaches that the digital audio system further comprises a coupling network coupled between the receiver and the external antenna and between the radio frequency modulator and the external antenna (Fig. 2, 3A and column 5, lines 53 – column 7, lines 30, where teaches coupling between the receiver and the external antenna and coupling between the modulator and the external antenna).

Regarding **claim 4**, Noreen teaches that the coupling network creates a short (satellite signal) circuit for higher frequencies received and lower frequencies transmitted and an open circuit (radio signal) for lower frequencies received and higher frequencies transmitted (Fig. 2, 3A and column 5, lines 53 – column 6, lines 63, where teaches coupling the network establishes a circuit for satellite signal for higher frequencies received and a circuit for radio signal for lower frequencies transmitted).

Regarding **claim 5**, Noreen teaches that the coupling network creates the short circuit for satellite signals received and FM radio frequencies transmitted and the open circuit for FM radio frequencies received and satellite signals transmitted (Fig. 2, 3A and column 5, lines 53 – column 6, lines 63, where teaches coupling the network establishes a circuit for satellite signal for higher frequencies received and a circuit for radio signal (AM/FM) for lower frequencies transmitted).

Regarding **claim 6**, Noreen teaches that the digital audio system further comprises an internal antenna (205 in Fig. 2) coupled to the radio frequency modulator for radiating the modulated signal via a second path (Fig. 2, 3A and column 5, lines 53 – column 6,

lines 63, where teaches the internal antenna (within the car) coupled to the radio frequency modulator for modulating signal via second path).

Regarding **claim 9**, Noreen teaches that the digital audio system is a satellite digital audio radio system for a vehicle wherein the external antenna is placed outside the vehicle and the internal antenna is placed inside the vehicle (Fig. 2 and column 5, lines 53 – column 6, lines 16, where teaches a satellite digital audio system for vehicle has the external antenna is placed on a roof of vehicle and the internal antenna is placed inside vehicle).

Regarding **claim 10**, Noreen teaches that the receiver is selected from the group comprising a satellite digital audio radio, an MP3 player, a digital FM radio receiver, and a digital AM receiver (Fig. 1, 2 and column 5, lines 19 – column 6, lines 16, where teaches the receiver comprising a satellite digital audio radio, a FM or AM radio receiver).

Regarding **claim 11**, Noreen discloses all the limitation as discussed in claims 1 and 3.

Regarding **claim 12**, Noreen discloses all the limitation as discussed in claims 4 and 5.

Regarding **claim 13**, Noreen discloses all the limitation as discussed in claims 1 and 6.

Regarding **claim 16**, Noreen discloses all the limitation as discussed in claims 1 and 9.

Regarding **claim 17**, Noreen teaches that a method of wirelessly coupling a source signal to a radio frequency receiver in a vehicle (Fig. 2 and column 5, lines 53 – column 6, lines 16, where teaches a satellite digital audio system for vehicle has wirelessly coupling source signal to radio signal receiver). Noreen teaches that modulating the source signal to provide a modulated signal (Fig. 2, 3, column 6, lines 17 – column 7, lines 30, and column 9, lines 21 – 62, where teaches the modulator uses voice coder for source encoding and modulated a modulated signal). Noreen teaches that splitting the modulated signal between an external radiating element and an internal radiating element (Fig. 2 and column 5, lines 53 – column 7, lines 19, where teaches receiving modulating signal by external antenna through satellite RF electronics to perform splitting the modulated signal (two split signal as seen Fig. 2) through internal radiating element).

Regarding **claim 18**, Noreen teaches that the step of splitting the modulated signal comprises creating isolation between the external radiating element and the internal radiating element (Fig. 2 and column 5, lines 53 – column 7, lines 19, where teaches receiving modulating signal by external antenna through satellite RF electronics to perform splitting the modulated signal (creating two split signal as seen Fig. 2) through internal radiating element).

Regarding **claim 19**, Noreen discloses all the limitation as discussed in claims 1 and 17.

Regarding **claim 20**, Noreen teaches that the method further comprises radiating the modulated signal via the external radiating element and the internal radiating element

and receiving the modulated signal at an FM radio receiver (Fig. 2 and column 5, lines 53 – column 7, lines 19, where teaches the modulated signal through the external antenna element and internal radiating element and receiving the modulated signal at an FM/AM radio receiver).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 8 and 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Noreen in view of Walker et al. (US 2005/0107029).

Regarding **claims 8 and 15**, Noreen does not specifically disclose the limitation “a tuning network for tuning the modulated signal coming from the internal antenna”. However, Walker discloses the limitation “a tuning network for tuning the modulated signal coming from the internal antenna” (Fig. 1, 3 and pages 2, paragraphs 19 – 22, where teaches a tuning circuit for tuning for modulated signal coming from the internal antenna). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the Noreen, as taught by Walker, provide the motivation to improve the radio modulated signal reception control for the enhancing signal quality in radio audio communication system.

***Allowable Subject Matter***

5. Claims 7 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record fails to disclose "the digital audio system further comprises a series of attenuators and low pass filters coupled to the radio frequency modular and a splitter for splitting the modulated signal between a first path toward the external antenna and the second path toward the internal antenna" as specified in the claims.

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Dambacher (US 5,333,155) discloses Transmitting Digital Audio Signals from Recording Studios to the Various Master Stations of a Broadcasting Network.

Davis (US 5,428,610) discloses FM Radio System Employing Time Shared Wide SCA for Digital Data Band.

Information regarding...Patent Application Information Retrieval (PAIR) system... at 866-217-9197 (toll-free)."

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks  
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Art Unit: 2684

Or P.O. Box 1450  
Alexandria VA 22313

or faxed (571) 273-8300, (for formal communications intended for entry)


Or: (703) 308-6606 (for informal or draft communications, please label  
"PROPOSED" or "DRAFT").

Hand-delivered responses should be brought to USPTO Headquarters,  
Alexandria, VA.

Any inquiry concerning this communication or earlier communications from the  
examiner should be directed to **John J. Lee** whose telephone number is **(571) 272-7880**.  
He can normally be reached Monday-Thursday and alternate Fridays from 8:30am-5:00  
pm. If attempts to reach the examiner are unsuccessful, the examiner's supervisor,  
**Edward Urban**, can be reached on **(571) 272-7899**. Any inquiry of a general nature or  
relating to the status of this application should be directed to the Group receptionist  
whose telephone number is (703) 305-4700.

J.L  
August 25, 2006

John J Lee

  
**EDWARD F. URBAN**  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600